CLAIMS:

What is claimed is:

1. A photodetecting device comprising:

a first region of semiconductor material of a first conductivity type;

a second region of semiconductor material of a second conductivity type opposite the first conductivity type and extending over a portion of the first region, the device being configured to permit light to enter the second region;

third and fourth regions of semiconductor material of the first conductivity type extending over portions of the second region, the third and fourth regions being respectively coupled to first and second electrical contacts.

2. The device of claim 1 wherein the first conductivity type is P and the second conductivity type is N.

3. The device of claim 1 wherein the third and fourth regions are more heavily doped than the first region.

4. A method of using a photocell, comprising

exposing the photocell to incident light;

driving a sample node of the photocell to a reset value;

sensing a monitor node of the photocell, the signal values of the monitor and sample nodes decaying in response to the incident light; and

driving the monitor node to a stop value in response to the signal value of the monitor node having decayed to a predetermined value.

5. The method of claim 4 further comprising:

releasing the sample node after driving the sample node to the reset value;

storing a first time value corresponding to the point in time of releasing the sample node; and

storing a second time value corresponding to the point in time of driving the monitor node.

6. The method of claim 4 wherein exposing is started after driving the sample node.

7. The method of claim 4 further comprising:

reading an output value related to the signal value of the sample node.

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8. An imaging system comprising:

an image sensor having a plurality of photocells, the photocells providing sensor signals in response to incident light and control signals, the photocells being part of an integrated circuit (IC) die, the IC die having a first region of semiconductor material of a first conductivity type, each of the plurality of photocells having

a second region of semiconductor material of a second conductivity type opposite the first conductivity type and extending over a portion of the first region, the IC die being configured to permit the incident light to enter the second region,

third and fourth regions of semiconductor material of the first conductivity type extending over portions of the second region, the third and fourth regions respectively coupled to first and second electrical contacts;

control circuitry configured to generate the control signals for controlling the image sensor; and

signal processing circuitry for generating image data in response to the sensor signals.

9. The imaging system of claim 8 wherein the plurality of photocells define one or more sets of photocells, each set being associated with a respective monitor node, the second contact of each photocell in a set being coupled to the set's respective monitor node, the system being further configured to stop integration in one or more of the sets in response to detecting a predetermined value on the set's respective monitor node.

10. The imaging system of claim 8 wherein the plurality of photocells define one set associated with a single monitor node.

11. The imaging system of claim 8 wherein the plurality of photocells are arranged as an array and define a plurality of sets, each set defined by a column of the array.

12. The imaging system of claim 8 further comprising

system controller for controlling the signal processing circuitry.

13. The imaging system of claim 8 further comprising optical system configured to receive the incident light to form an image on the image sensor; and communication interface for transferring the image data to an image processing system separate from the imaging system.

14. The imaging system of claim 8 wherein the third and fourth regions are formed as implants using a MOS fabrication process.

15. The imaging system of claim 8 wherein each photocell further comprises reset circuit configured to drive a voltage of the first contact to a reset value in response to a first reset signal.

16. The imaging system of claim 9 wherein the control circuitry causes the set's respective monitor node to be pulled high in response to detecting the predetermined value.